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DIGITAL DIVIDES IN THE MEDITERRANEAN

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An Exploratory Paper

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Abstract

This exploratory paper attempts to describe the status of the international digital divide in the Mediterranean area. To do so, it has assembled data on the level of Internet penetration in the Union for the Mediterranean (UM), Some non-littoral UM states were included for purposes of comparison, as were a number of EU non-UM states. Finally, a small number of non UM, non EU, OECD members were included, again for benchmarking purposes. In all, 27 countries were studied, 21 of them Mediterranean littoral states and 6 not.

Internet penetration was evaluated in terms of Internet penetration (number of users relative to population), number of Internet hosts relative to population, broadband subscribers relative to population, Digital Opportunity Index score (DOI), and Change in DOI. score. These measures were used to assign the countries involved to tier levels for each measure. The individual tier measures were then averaged to provide an overall tier ranking for each country; the rankings defined are Upper, Upper Middle, Lower Middle, and Lower.

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The major findings are that there are clear distinctions between the Upper Tier consists primarily of the benchmark states; the Upper Middle tier contains mainly Northern Mediterranean littoral states; the Lower Middle Tier comprise mainly Eastern Mediterranean littoral states, while the Lower tier consists of littoral states dispersed throughout the Mediterranean. A conclusion is that the UM contains states at all levels of Internet development, and that the higher level states in that grouping could greatly assist the lower level ones in addressing the digital divider.

Keywords: digital divides, Internet penetration, Mediterranean region, ranking

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Extended Abstract

1. Introduction

The Mediterranean area comprises a broad diversity of countries, but efforts are nevertheless under way to establish a Union of the Mediterranean. When first mooted by French President Nicolas Sarkozy, this union, then referred to as a Mediterranean Union, was seen as one that would encompass all the littoral states. However, for various reasons, the original concept underwent revisions, including expansion to include all EU members, not only those bordering the Mediterranean. In dealing with such a broad range of countries, it is obviously necessary to accumulate information that could contribute to the analysis and formulation of actions undertaken by the member states and the organization. The objective of this paper is to undertake an exploratory study of the degree of development of the Internet in the Mediterranean area; the concentration on this area, in spite of the broader scope of the planned Union, is the shared historical and cultural background of many of those states. Furthermore, it is assumed that any programs undertaken will focus on that part of the Union.

Thus, this study encompasses all 18 littoral states and compares them with states outside the Mediterranean; the non-littoral states include other European Union members who are all slated to join the Union for the Mediterranean (UM) as well as four additional countries, not slated to join the UM, which serve as a benchmark against which to compare the other groups. In all, the study addresses 27 countries, which exhibit convoluted patterns of location and organizational affiliation.

In summary, the study includes 21 Mediterranean littoral states, of which 6 are OECD members, and15 are not: an additional two non-littoral UM entities (Jordan and Palestine) are also included along with an additional four countries, three of which belong to OECD, but are neither littoral nor UM members (Australia, Japan, Mexico, and the US). See Table 1 for details.

2. Methodology

The methodology was to collect data on a number of parameters of national Internet development and to assign each country to a tier level on each parameter. The tiers were chosen so as to represent natural breaks in the data where possible, and to assign a similar number of countries to each tier, although not necessarily an equal number. Tier averages were then computed in order to obtain overall tier groupings for all the countries on all parameters. Finally, comparisons were made between different groupings of countries – specifically, littoral vs. non-littoral states, North-African versus other littoral states, and different groupings of OECD members and non-members.

Table 1: Countries included in the study: locations and affiliations

	Littoral, not OECD	Littoral & OECD	not Littoral	UM[1] & OECD	UM, not OECD	Not UM	EU	Not EU
Albania	X				X			X
Algeria	X				X			X
Australia			X			X		X
Bosnia & Herzegovina	X				X			X
Croatia	X				X			X
Cyprus	X				X		X	
Egypt	X				X			X
France		X		X			X	
Greece		X		X			X	
Ireland			X	X			X	
Israel		X[3]		X				X
Italy		X		X			X	
Japan			X			X		X
Jordan[2]	X				X			X
Lebanon	X				X			X
Libya	X				X			X
Malta	X				X			X
Mexico			X			X	X	
Morocco	X				X			X
Palestinian Territories[2]	X				X			X
Slovenia	X				X		X	
Spain		X		X			X	
Sweden			X	X			X	
Syria	X				X			X
Tunisia	X				X			X
Turkey		X		X				X
USA			X			X		X
Total: 27	15	6	6	8	15	4	9	18

1. Gibraltar, Monaco and Montenegro, slated to be UM members, are not included in the analysis because of paucity of data.
2. Not strictly speaking Mediterranean littoral states, but fall naturally into this category.
3. Invited to join OECD, accession talks in progress, but not yet a full member.

Efforts were made to obtain data from a small number of reliable sources that encompass the gamut of nations studied here. Eventually, this boiled down to five main sources, with occasional supplements where necessary. Those sources are the International Telecommunications Union (ITU 2007), the US Central Intelligence Agency (CIA 2008), Internet World Stats (2008), the *Economist Pocket World in Figures* (2006) and the ITU and UNCTAD report (ITU&UNCTAD 2007). Even with such a small number of comprehensive sources, severe problems of consistency arose and were dealt with.

The Internet development parameters utilized were: Internet penetration (number of users relative to population), number of Internet hosts relative to population, broadband subscribers relative to population, Digital Opportunity Index score (DOI), and Change in DOI. These are only partial indicators and one can think of additional insightful parameters such as uses made of the Internet and their breakdown or the economic and social structure of the Internet in each country. But such data are difficult to obtain in many cases and there are no central collections of such data for all the countries involved. It was decided that at this early stage of the research it was preferable to utilize a few respected, comprehensive, and internally consistent sources

3. Analysis and Findings

The summaries of tier data were sorted by the average country tier scores (See Table 2). Somewhat arbitrarily dividing the tier scores into levels at points where the unit digit changes, some fairly consistent results emerge. The Upper tier group contains all the OECD countries introduced as a benchmark, i.e. Australia, Japan, and the US. The only Mediterranean littoral state in that group is Israel implying that the benchmark group dominates the littoral states in terms of Internet development. The second, Upper Middle group, comprises four littoral states and Ireland, all of them EU and OECD members. The lower middle tier includes seven littoral states and Mexico; the littoral states are dispersed around the Mediterranean, three are EU members and two belong to the OECD. In the Lower tier grouping are nine littoral states, none of them EU or OECD members. Thus, and not surprisingly, Internet development is quite closely related to EU and/or OECD membership.

To round out the analysis of the effects of location and organizational affiliation, two further dichotomies were addressed. The first is the distinction between the Mediterranean littoral states in the sample and non-littoral UM states; the difference is quite striking with the average tier score for littoral states being 4.2, while for the non-littoral states it is 1.7. Second, the Southern (North African) littoral states were compared to the other (Northern and Eastern) littoral sates; the average score for North Africa is 3.4 and for the rest 1.1 – again a very striking difference. Morocco stands out as the only North African state to have a tier average above 4.0 on a 1 to 5 scale; the relative success of Morocco in digital development was recognized in the ITU and UNCTAD report (ITU&UNCTAD 2007).

4. Conclusion

The obvious conclusion of this study is that there are great disparities in Internet development among the countries of the proposed Union for the Mediterranean; addressing these disparities, or digital divides, would be a very worthwhile undertaking for the Union, especially as many of the members might benefit from such assistance that other members are eminently well-placed to provide. Understanding the digital

divides observed and devising methods for addressing them clearly require much additional and more specific research.

Table 2: Internet Development by Tiers.

Country	Internet users (Penetration)	Internet hosts[1]	Fixed Broadband I-net subscribers per 100 population	International Internet bandwidth	DOI tier	DOI change tier	Tier average	Tier Group
Australia	1	1	3	1	1	2	1.50	
United States	1	1	1	1	1	4	1.50	
Israel	2	2	1	1	1	2	1.50	Upper
Sweden	1	1	1	1	1	4	1.50	
Japan	1	1	1	2	2	4	1.83	
France	2	2	1	1	2	4	2.00	
Italy	2	2	2	1	2	3	2.00	
Ireland	2	3	3	1	1	3	2.17	Upper middle
Spain	2	3	2	1	2	3	2.17	
Slovenia	1	4	2	2	2	3	2.33	
Cyprus	2	5	3	3	2	3	3.00	
Malta	3	4	2	2	2	5	3.00	
Croatia	3	5	4	2	3	4	3.50	
Greece	3	3	4	3	3	5	3.50	Lower middle
Morocco	3	4	4	3	5	3	3.67	
Mexico	3	4	4	3	4	4	3.67	
Turkey	3	4	4	3	4	4	3.67	
Lebanon	3	4	3	4	4	5	3.83	
Algeria	4	5	4	5	5	1	4.00	
Bosnia & Herzegovina	3	5	5	4	4	3	4.00	
Egypt	4	5	5	4	5	3	4.33	
Tunisia	4	5	5	4	5	3	4.33	
Albania	4	5	5	5	5	3	4.50	Lower
Jordan	4	5	5	4	4	5	4.50	
Syria	5	5	5	5	5	2	4.50	
Libya	5	5	5	5	5	3	4.67	
Palestine	4	5	5	4	5	5	4.67	

[1] Data on number of Internet hosts exhibit extreme inconsistency. In the case of the US, for example, CIA data (number of hosts/population) puts the number of Internet hosts at 13 per 1000 population - less than any other developed country. *Economist* data put the number at 831 hosts per 1000 population by far the largest for all countries. The inconsistency lies, of course, in the estimation method. The CIA apparently estimates hosts for any country as the number of domain names with the country suffix. As the .us suffix is not widely used, this leads to a very large underestimation of the number of US hosts. The Economist, on the other hand, apparently counts all hosts with no country suffix as US hosts; since many organizations use domain names ending in .com, .edu etc. with no country code, this obviously greatly overestimates the number of US hosts. Here we have attempted to mitigate this problem by using the average number of hosts provided by these two sources, whenever provided by both.

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